**AP STAT- Ch. 17: Binomial Normal Approximations**

1. Determine whether each binomial distribution (with given *n* and *p)* can be approximated with the normal distribution. *(does the check pass??)*

a. *n* = 30, *p* = .5 b. *n* = 50, *p* = .9 c. *n* = 40, *p* = .8

1. For each of the following values of *p*, determine the minimum sample size need to use the normal approximation. (the minimum *n* so that the check passes)

a. *p* = .1 b. *p* = .3 c. *p* = .8

***For the following, don’t forget to do the check first!!!***

1. An airline company has found that 5% of its passengers do not show up for their scheduled flights. If a plane has 700 seats, find the probability that 50 or more people will not show up for the fully booked flight.
2. It is estimated that 48% of all motorists use their seat belts. If a police officer observes 400 cars go by in an hour, what is the probability that the proportion of drivers wearing seat belts is between 45% and 55%?
3. Suppose that 70% of all dialysis patients will survive for at least 5 years. If 100 new dialysis patients are selected at random, what is the probability that the proportion surviving for at least 5 years will exceed 80%?
4. Of all five-year-old children, 56% are enrolled in school. If a sample of 1500 such children is randomly selected, find the probability that at least 750 will be enrolled in school.
5. A surgical procedure is successful 80% of the time. In a random sample of 100 patients, find the probability that the sample proportion is **within** .01 of the mean.
6. Say that 37% of households have a VCR. What is the probability that in a random sample of 250 households, the sample proportion **differs** from the mean by **more** than .03?
7. A car dealer states that 90% of all automobiles sold have air conditioning. If the dealer sells 1000 cars, find the probability that fewer than 100 of them will not have AC.
8. Find the probability that in 2000 births, between 975 and 1050 will be female.

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